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BROOKHAVEN
NATIONAL LABORATORY

Memo

DATE: *July 12, 2002*

TO: RHIC E-Coolers

FROM: *Ady Hershcovitch*

SUBJECT: **Minutes of the July 12, 2002 Meeting**

Present: Leif Ahrens, Ilan Ben-Zvi, Xiang Yun Chang, Ady Hershcovitch, Jorg Kewisch, William Mackay, Stephen Peggs, Thomas Roser, Triveni Srinivasan-Rao, Dejan Trbojevic, Dong Wang, Jei Wei.

Topics discussed: Simulation & Calculations.

Simulation & Calculations: Jorg opened the meeting by reporting that he ran PARMELA from the end of the LINAC through the 360^0 loop to the solenoid. The calculations were done for a round beam. He was able to transfer the data from MAD to PARMELA and to verify that the both codes gave the same results. Next step is to add space charge, since MAD does not facilitate inclusion of space charge effects. According to the computations, the loop adds 200 eV to the transverse component of the electron temperature. Since the plan is operate the RHIC cooler with an electron beam whose transverse temperature is 1 keV, Jorg was satisfied with the results. Dong commented that transverse electron temperature should be as low as possible, since reducing the transverse electron temperature improves cooling. One wants to ensure that going through the loop does result in the largest contribution to the transverse electron temperature.

Ilan indicated that Dong got a new version of PARMELA that should work well for magnetized beams. Dong is in contact with Lloyd Young from Los Alamos about this code. Ilan, Dong, and Xiang Yun described simulations of non-magnetized electron beams generated in electron guns operating at different frequencies. Dong is looking at output from a gun operating at 1.3 GHz, while Xiang Yun is simulating a 700 MHz electron gun. They are looking at non-magnetized transport to be followed with simulations of magnetized electron beams. So far results, based on the beam size reaching the LINAC, are more favorable for a 700 MHz gun. Ilan, however, pointed out that this work is still in progress.

Thomas initiated a discussion regarding the merit of a flat beam versus a round beam. It is easier to follow a flat beam. However, a flat introduces an additional complication. Since Thomas is due to make a presentation at DOE on the 25th, a discussion of what additional information can be obtained during the next week ensued. Thomas would like to display most the components of a design based on a round beam, and compare it to the Novosibirsk design (for which, unlike BNL's, no transport calculation were performed).